

Exploring the influence of neighborhood income and income inequality to resting blood pressure in a diverse sample of urban dwelling adults

McNeely, J.M., MA, Shah, M.T, MA, Allen, AJ, MEd., Sprung, M.R, MA, Waldstein, S.R., PhD, Evans, M.K., MD & Zonderman, A.B., PhD

Clarifying the association between income distribution and population health is critically important to improve the health of Americans. Currently, little is known about the interaction of neighborhood income and income inequality on blood pressure (BP) regulation. Here we posited that associations of income inequality to BP, and its hemodynamic determinants, would be moderated by median neighborhood income in a sample of 731 African Americans (AA) and White adults enrolled in the HANDLS Study. Census tract-level median household income and the Gini coefficient, a measure of income inequality, were obtained from the U.S. Census Bureau. Volunteers completed a series of medical tests that included assessment of resting systolic BP (SBP), diastolic BP (DBP), total peripheral resistance (TPR), stroke volume (SV), and cardiac output (CO). The sample had a mean age of 47 years, and was 44% male, 62% AA, and 52% living in poverty. The multiple regression analyses, adjusted for sociodemographic, biomedical and lifestyle factors, revealed a significant interaction between median income and income inequality for DBP ($\beta = -0.70$; $p < .05$), SV ($\beta = 1.23$; $p < .001$), CO ($\beta = 1.19$; $p < .001$) and TPR ($\beta = -1.24$; $p < .001$). People living in low-income/high inequality neighborhoods had significantly worse hemodynamic profiles (i.e., higher DBP, lower SV, lower CO and higher TPR) compared with those living in low-income/low inequality neighborhoods as well as high-income/high inequality neighborhoods. The influence of income inequality on BP and its hemodynamic determinants was most potent for people living in lower-income neighborhoods. Legislators should consider equalizing income distribution in lower-income neighborhoods to maximize health outcomes and decrease health disparities.